REMARKS

This Amendment is responsive to the Office Action mailed March 9, 2004, to which there was appended a copy of the Office Action initially issued on September 9, 2003. The Examiner's comments have been carefully considered.

Applicants request an extension of time to reset the due date for response from June 9, 2004, to July 9, 2004, and request that the extension of time fee be charged to our account 10-0100.

In the non-final Office Action mailed on September 9, 2003, claims 2, 3 and 5-14 were all rejected as being obvious on the basis of U.S. Patent No. 5,308,461 to Ahonen in view of or when combined with the following secondary references: JP 05033534 issued to Masashi Inoue and U.S. Patent No. 4,343,830 to Sarma et al. In paragraph 2 of the Office Action the Examiner states the Ahonen teaches the invention, including the elements specified in subparagraphs (i) - (vi). However, the Examiner concedes that Ahonen fails to teach elements (i) - (vii) set forth on paragraph 3 of the Office Action. The Examiner takes the position that the Inoue reference shows a non-contact wafer holder that teaches element (viii) and (ix), set forth on page 4 of the Office Action, which supplements the Ahonen teaching and provides some of the missing elements and that the balance of the missing elements, according to the Examiner, are provided in Sarma et al., these elements being specified in paragraphs (viii) - (x) on page 4 of the Office Action. Further, the Examiner takes the position that it would have been obvious to one of ordinary skill in

the art at the time that the invention was made for Ahonen to replace his wafer holders with the wafer holders disclosed in the Inoue Japanese reference, including changing the mounting angle of the wafer holders' horizontal platform and using a limiter angle other than 90° and to add the automation components as taught by Sarma. The motivation for making the proposed combinations of the three applied references, and any additional modifications to the resulting combination that might be necessary, the Examiner states, on page 5 of the Office Action, would be to "provide alternate and equivalent means for wafer support, dimensional optimization, and to produce a larger through put of wafers respectively." For reasons more specifically set forth below, the Examiner's rejections are respectfully traversed. The Examiner is respectfully requested to reconsider the rejections and withdraw the same.

In order more clearly define the invention, claim 2 and 14 have been amended. Claim 2 now clearly specifies that the plasma jet generator is located to direct a plasma jet upwardly with respect to the horizontal platforms of the wafer holders so that it maintains the wafers in a suspended state proximate to but out of contact with associated platforms. Such suspension of the wafers is due to the upwardly directed plasma jet, as discussed in the application. Claim 14 clarifies that the storage devices for the wafers to be treated are provided in conjunction with a manipulator that manipulates individual wafers in relation to the platforms, as disclosed in the application.

A review of the applied references indicates that they contain teachings that differ from the teachings of the subject invention, that the structures in each reference differ from those of the subject invention and that the ultimate results of each differ as well. The references fail to disclose elements required by the claims, and the three applied references, contrary to the Examiner's suggestions, still lack the teachings of certain elements specifically recited in the subject application. Furthermore, the references fail to contain any teaching or suggestion that these references should be combined as proposed by the Examiner. To the extent that the proposed combination would require additional changes or modifications, to arrive at the claimed invention, the references likewise fail to teach or provide any suggestion that such additional modifications be made.

Ahonen teaches a method for depositing multilayered films. However, as indicated in Fig. 1 of that patent, the patent is more concerned with the deposit of thin films on a substrate through the use of an RF-excited ion beam gun. The ions are directed at a target in such a way that molecules of the target are randomly sputtered off and deposited on the substrate. Although the patent fails to provide any teaching or suggestion of how the wafers cooperate with the wafer holders, and it is clear from Fig. 1 and from column 3 starting at line 23 that the wafers are "held" by a substrate holder. In fact, in Fig. 2 it appears that the wafers are fixed to - and they definitely are in contact with - the wafer holder s 60, 62. Thus, the wafers are not suspended, as the present invention teaches, and there is no teaching or

suggestion in Ahonen that such wafers be suspended as is now more specifically and clearly required by the present invention's amended claim 2.

Also, although the Examiner has stated that Ahonen teaches a plasma jet that is "directed upwardly," referring to Fig. 1 of that patent, it is clear that the ion gun 30 generates an ion beam that is directly horizontally at a target 50. The ion beam knocks material off the target and it is sputtered generally in the directions of the substrates, and, although the directions of the sputtering are generally upward, are clearly in random directions and are not directed upwardly as disclosed in the subject application.

The Examiner has conceded that Ahonen fails to teach some eight (8) elements (outlined on page 3 of the Office Action) that are disclosed in the subject application. The Examiner seeks to fill these gaps from the two secondary references. However, the secondary references fail to teach all of the missing elements. Therefore, even if it were obvious to combine the references as proposed, there would still result no combination that would correspond to the claimed combinations of the present invention. For example, the subject application's claim 2 requires that the plasma jet generator be located such that said jet is directed upwardly to maintain the wafers in a suspended state proximate to but not in contact with the associated platform. Ahonen, as previously suggested, shows the wafers 51, 54 secured to and in contact with the wafer holders 60, 62. The Inoue Japanese publication is for a sample holder, whose purpose is to hold a wafer without scratching the surface

thereof. Although the wafers W appear to be spaced away from the wafer guides or protecting members 3, the Abstract of this publication states that the gas is "blown onto the wafer W from a gas blow-out port 21." This is confirmed by the directions of the arrows leading into the blow-out port 21 and the arrows between the holder body 2 and the wafer W. It is clear that by forcing air out in the directions of the arrows, the wafers W are urged away from the holder bodies 2, although there is no apparent teaching in this Japanese reference that there is a flow of plasma on the other side of the wafers to suspend the wafers at a predetermined distance from the holder bodies. The specific function or manner that the holders are used is not clear and there is no teaching from the English Abstract.

The Sarma et al. patent likewise fails to teach elements required by the rejected claims. The patent, for improving the efficiency of solar cells, illustrates, in Fig. 5, the use of a high-pressure plasma system to introduce hydrogen into the substrate. This plasma system includes a high pressure chamber having first and second auxiliary chambers coupled to the high pressure chamber. It is immediate clear from this patent that the platform 47, which is supported by the shaft 48, supports a plurality of silicon wafers held by a tray or platform 47. The Examiner states that Sarma et al. teaches an adjustable height base, directing applicants to the bolts attaching the member 44 to chambers 51, 52. Applicants respectfully traverse this observation. The bolts referred to by the Examiner simply tighten the pressure container 44 to the auxiliary chambers against a seal (unnumbered). Once the bolts

are tightened, it does not appear that they are intended to be moved to adjust the height of the container 44. It is clear from the arrows that the axial end of the shaft 48, that it is, instead, the shaft that is moved upwardly and downwardly as well as rotated. It is clear, therefore, that Sarma cannot teach a plasma jet generator mounted on an adjustable height base. If anything, the reference teaches the silicon wafers 46 mounted on an adjustable shaft.

Further, the Examiner also contends that Sarma et al. teaches a manipulator, as required by the rejected claims. What the Examiner refers to as manipulators 57, 64, however, are really conveyors that move an entire tray of silicon wafers out of the high pressure container 44. Claim 14 of the subject application has now been amended to more clearly point out that the manipulator of the present invention manipulates individual wafers in relation to the platforms. In fact, the plasma generator or nozzle 43 in Sarma et al. appears to be fixed in place.

In view of the foregoing, it is respectfully submitted that none of the references disclose or even remotely suggest a device for treating wafers with a plasma jet of the type defined in the subject application's independent claims 2, 7, 10 and 14, in which a plasma jet is directed upwardly to maintain wafers in a suspended state proximate to but out of contact with associated platforms; in which each wafer holder is provided with at least three vortex chambers and three tangential channels and fluid flow communication with the gas applying means in the chambers, a device that includes limiters to limit the maximum deviation of the

treated wafers during treatment thereof; and such devices that include a manipulator for manipulating individual wafers in relation to the platforms so that each individual wafer can be properly and independently suspended in relation to a holder. Therefore, even if the combination proposed by the Examiner were obvious, and was made, it would still not result in the claimed combinations. Each of the resulting combinations proposed by the Examiner would still require further modifications in order to obtain the claimed devices. Such proposed combinations and further modifications, it is respectfully submitted, could not be performed without the hindsight of the present application and the teachings contained therein.

The Examiner concedes that there are eight (8) elements missing from the primary Ahonen reference. In fact, there are more - since none of the references, as indicated above, teaches a plasma jet generator locator such that a plasma jet is directed upwardly into the plane of the horizontal platforms of the wafer holders. It would, indeed, be difficult to fathom how any person skilled in the art could find it obvious to fill so many gaps, make so many changes and modifications, without some motivation for doing so, particularly without certainty that there would be a reasonable probability of success in combining three such disparate pieces of prior art. Any combined structure would need to be further modified to provide a device coextensive with the rejected claims.

The Examiner has simply stated that a person skilled in the art would be motivated in this way, without providing any convincing reason for such motivation.

The Examiner states that such a person would want to "provide alternate and equivalent means for wafer support, with dimensional optimization, and to produce a larger throughput of wafers respectively." However, it is respectfully submitted that this is not a showing sufficiently clear and particular to satisfy the statute. It is respectfully submitted that the "motivations" set forth by the Examiner are merely broad, conclusory statements that, standing alone, are not the type of evidence that the courts accept in establishing motivation.

The device of claim 7 comprises a set of wafer holders that are provided with at least three vortex chambers and three tangential channels in fluid flow communication between a gas supply means and the chambers. As cited at page 4 of the specification, this wafer holder permits the stable positioning of the wafer to be treated in the vicinity of the holder with a gas gap, without allowing the wafer and the holder to touch, and while enhancing the output of the device. As Japanese Publication JP 05-033534 comprises only one vortex chamber, the Japanese publication cannot teach the structure of a wafer holder that is comprised of at least three vortex chambers and three tangential channels, as taught in claim 7 of the present application.

The statutory standard for the ultimate determination of obviousness provides that a claimed invention is unpatentable if the differences between it and the prior art 'are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.' 35 U.S.C. § 103

(1994). In line with this statutory standard, the case law provides that 'the consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art.' *In re Dow Chem.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988).

Two requirements are contained in this criterion. The first requirement is that a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential evidentiary component of an obviousness holding.' *C.R. Bard, Inc., v. M3 Sys. Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998)."

(i) This evidence may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. *See Pro-Mold & Mold Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996). However, the suggestion more often comes from the teachings of the pertinent references. *See Om re Roufflet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

(ii) The showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not 'evidence.' *See Dembiczak*, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617.

The U.S. Patent and Trademark Office cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must

set forth the rationale on which it relies.

The factual inquiry whether to combine references must be thorough and searching. It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. *See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) ('a showing of suggestion, teaching, or motivation to combine the prior art references is an "essential component of an obviousness holding"' (quoting *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998)); *In re Dembiczak*, 175 F.3d 994, 999 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ('Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.'); *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ('"teachings of references can be combined *only* if there is some suggestion or incentive to do so."') (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).

The need for specificity pervades this authority. *See, e.g., In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ('particular findings must be

made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed'); *In re Roufflet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) ('even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.'); *In re Fritch*, 972, F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (the examiner can satisfy the burden of showing obviousness of the combination 'only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references').

Thus, where the Board has rejected the need for 'any specific hint or suggestion in a particular reference' to support the combination of the ... references, omission of a relevant factor required by precedent is both legal error and arbitrary agency action. *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002)

Thus, it is clear that to establish a *prima facie* case of obviousness, the U.S. Patent Office must, *inter alia*, show 'some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.' *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). *See, also, In re Thrift*, 298 F.3d

1357, 63 USPQ2d 2002 (Fed. Cir. 2002).

There must be a teaching or suggestion within the prior art, within the nature of the problem to be solved, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources, to select particular elements, and to combine them as combined by the inventor. *Crown Operations International, Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002). Anything less is clearly hindsight reconstruction, which has been consistently forbidden by the courts.

Here, the Examiner has simply alleged some broad conclusory statements, without pointing to any objective evidence in the references or elsewhere, that shows it would have been obvious to combine because the motivation to do so was present in the prior art. This is error, and it fails to establish a prima facie showing of obviousness under 35 U.S.C. § 103.

In view of the foregoing, it is respectfully submitted that the prior art, on the record, does not establish a motivation for the proposed combination. Furthermore, as suggested above, even if the motivation was there to combine the references as proposed by the Examiner, the resulting combinations would still fail to meet the limitations of the rejected claims, particularly as amended herein. Accordingly, the Examiner is respectfully requested to reconsider the rejections of the claims and withdraw the same.

The application is now believed to be in condition for allowance. Early

allowance and issuance is, accordingly, respectfully solicited.

Applicant hereby petitions that any and all extensions of time of the term necessary to render this response timely be granted. COSTS FOR SUCH EXTENSION(S) AND/OR ANY OTHER FEE DUE WITH THIS FEE DUE WITH THIS PAPER THAT ARE NOT FULLY COVERED BY AN ENCLOSED CHECK MAY BE CHARGED TO DEPOSIT ACCOUNT #10-0100.

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Respectfully submitted,

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